

### Abstract

An apparatus for cooling single and multiple high-flux and ultra-high-flux heat dissipating devices, comprising a liquid coolant module having a base plate and a cover plate defining therebetween a liquid coolant chamber with a liquid coolant inlet port and a liquid coolant outlet port in fluid communication with the liquid coolant chamber; at least one heat dissipating device mounted to the liquid coolant module; a multi-level-cooling-enhancement stud mounted upon each heat dissipating device and disposed within the liquid coolant module; and apparatus for inducing phase change nucleate boiling of a subcooled liquid coolant within the liquid coolant module to enhance its cooling performance.